

International Livestock Research Institute

Training course report

Boosting Uganda's Investment in Livestock Development

Participatory disease surveillance training

March 2020



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#### Citation

ILRI (International Livestock Research Institute).2020. *Boosting Uganda's Investment in Livestock Development: Participatory disease surveillance training*. Report of a training course held on 9–13 March 2020. Nairobi, Kenya: ILRI.



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# Acknowledgements

The Boosting Uganda's Investment in Livestock Development (BUILD) project is funded by the German Federal Ministry for Economic Cooperation and Development. The project team acknowledges the support of Vétérinaires Sans Frontières Germany towards the training workshop on participatory disease surveillance.

## Abbreviations and acronyms

BUILD	Boosting Uganda's Investment in Livestock Development
FAO	Food and Agriculture Organization of the United Nations
ILRI	International Livestock Research Institute
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
PENAPH	Participatory Epidemiology Network for Animal and Public Health
VSF	Vétérinaires Sans Frontières

# Introduction

The [Boosting Uganda's Investment in Livestock Development \(BUILD\)](#) project aims to improve the health of livestock in Uganda and, consequently, the health of people involved in producing and processing livestock food products. The five-year research-for-development project was launched in January 2019 and is funded by the German Federal Ministry for Economic Cooperation and Development. It is implemented by a consortium<sup>1</sup> led by the International Livestock Research Institute (ILRI) under the framework of an investment package to improve animal health in Africa.

Approximately 70% of households in Uganda keep at least one kind of livestock (including poultry). However, livestock production is constrained by diseases that infect or kill animals thereby threatening the food and nutrition security and livelihoods of livestock-keeping households. Zoonotic diseases threaten the health of producers, processors and consumers of animal products. Uncontrolled use of antibiotics to treat livestock diseases poses a threat to human health through antimicrobial resistance.

The BUILD project has four components:

1. Supporting ongoing campaigns to eradicate peste des petits ruminants
2. Controlling Rift Valley fever
3. Controlling antimicrobial resistance
4. Improving veterinary public health (food safety and occupational health)

In line with the first two components of the project and the need to strengthen surveillance frameworks for increased disease detection and response, a training workshop on participatory disease surveillance was organized for 48 field animal health practitioners in the project's 12 target districts<sup>2</sup>. The workshop was organized by Vétérinaires Sans Frontières (VSF) Germany in collaboration with the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and held at Acacia Hotel, Mbarara, Uganda on 9–13 March 2020.

This document is a report of the training workshop with details of the methods and approaches, modules, topics, field work and evaluation. The terms of reference, agenda, evaluation form, training notes and list of participants are included as annexes to the report.

## Objective

The overall objective of the training workshop was to impart knowledge and skills in participatory epidemiology and participatory disease surveillance to support the conventional disease surveillance systems currently in place.

## Expected outcomes

1. Enhanced capacity of participants to implement disease control strategies for peste des petits ruminants, Rift Valley fever and other transboundary animal diseases.
2. Strengthened field animal disease surveillance and laboratory diagnosis.

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<sup>1</sup> Consortium members are the International Livestock Research Institute, Vétérinaires Sans Frontières Germany, the German Federal Institute of Risk Assessment, the Friedrich Loeffler Institute, the Ministry of Agriculture, Animal Industry and Fisheries and the National Agricultural Research Organization.

<sup>2</sup> The 12 target districts are Budaka, Butebo, Isingiro, Kabaale, Kiruhura, Moroto, Nakasongola, Napak, Rakai, Sembabule, Soroti and Wakiso.

3. Ability to conduct participatory epidemiology and participatory disease surveillance as routine animal disease surveillance activities in the districts.

## Opening session

Joshua Waiswa, technical project manager at VSF Germany, highlighted his organization's background, objectives and activities in eastern Africa and Uganda in particular. He emphasized the organization's role in the project with regard to control of peste des petits ruminants and Rift Valley fever. He said VSF Germany was committed to partnerships with state and non-state organizations, noting that support from the districts would be critical for the success of the project. He then introduced the two workshop facilitators, Joseph Sserugga and Sam Okuthe.

Denis Rwabita Mugizi, animal health specialist at ILRI, welcomed the participants and explained how the project's objectives, components and activities are aligned with Uganda's national livestock development agenda.

The chief guest, Ann Rose Ademun, Commissioner for Animal Health and Chief Veterinary Officer, thanked the participants for attending the workshop and emphasized the need for them to share their knowledge and experiences with their colleagues who were unable to attend. She highlighted the negative socio-economic impacts of peste des petits ruminants and Rift Valley fever on the livelihoods of rural smallholder livestock farmers and encouraged the participants to work diligently despite limited resources to respond to animal diseases. She thanked VSF Germany for facilitating the workshop and reiterated the commitment of the Government of Uganda to developing the livestock sector. She requested the project to certify the trainees to increase the number of certified participatory disease surveillance practitioners in the country and thus strengthen national animal disease surveillance.

# Training approach, structure and methods

## Facilitators

The workshop was led by Joseph Sserugga, a Participatory Epidemiology Network for Animal and Public Health (PENAPH)-certified trainer in participatory epidemiology and participatory disease surveillance from MAAIF. He was assisted by Sam Okuthe, a certified participatory disease surveillance trainer from the Food and Agriculture Organization of the United Nations (FAO).

## Trainees

The 48 trainees comprised three technical staff from MAAIF, one technical officer from FAO, three staff from VSF Germany, five research fellows and 36 field veterinarians and animal health technicians from the 12 target districts.

## Structure and methods

The training course was structured as follows: pre-training evaluation, identification of expectations, formal presentations, group work, field practical sessions (three focus group discussions) and post-training evaluation. Participants were provided with workshop notes, the FAO manual on participatory epidemiology (Methods for the Collection of Action-Oriented Epidemiological Intelligence) and the PENAPH training manual.

Participatory training methods and tools were used to ensure that all participants were actively engaged. The methods used included participatory energizers and climate-setting brainstorming sessions, role plays, PowerPoint presentations, focus group discussions, plenary feedback sessions using flip charts, practical sessions and demonstrations.

Some participants had been previously trained and were very useful in enhancing the field experiences of participatory disease surveillance. The participants developed district-level case studies for either peste des petits ruminants or Rift Valley fever. The trainers will assess the case studies, with support from FAO, VSF Germany and ILRI, for possible publication. The post-training evaluation indicated a high level of satisfaction with the presentation and the content activity. At the end of the training workshop, the participants received certificates of participation.

The project team designed and prepared the training workshop with support from two technical officers from VSF Germany: Joshua Waiswa and Claire Julie Akwongo. The MAAIF peste des petits ruminants and Rift Valley fever focal persons, Paul Lumu and Dan Tumusiime, provided support. Training materials that were prepared included session plans, handouts, presentations and case studies. The training material was adapted from the FAO and PENAPH training manuals on participatory epidemiology.

## Modules

- Origins of participatory approaches and methods
- Principles of participatory epidemiology
- Attitudes and behaviour towards participatory epidemiology
- Indigenous knowledge on livestock health and production



- Triangulation in participatory epidemiology
- Methodological adaptation and flexibility
- Participatory epidemiology tools and methods
- Interviewing methods
- Visualization methods
- Ranking and scoring methods
- Options for quantification and standardization in participatory epidemiology
- Presentations and feedback
- Statistical analysis in surveillance systems and participatory disease surveillance
- Development of case study concept notes
- Training workshop evaluation

## Climate-setting and ground rules

The participants introduced themselves in turn, mentioned their expectations and fears and agreed on the ground rules to guide the training workshop. These are summarized below.

### Expectations

- Information on VSF Germany and its mandate
- Strengthened surveillance and reporting of Rift Valley fever and peste des petits ruminants
- Communication system for sharing of information on participatory disease surveillance
- Knowledge of peste des petits ruminants and Rift Valley fever epidemiology and control strategies in Uganda
- Knowledge of the causes of antimicrobial resistance in poultry and how to prevent it
- Refreshed knowledge of the principles of public veterinary health
- Proper time management
- Facilitation grant for surveillance activities
- Certificates at the end of the training
- Access to training notes
- Creation of a professional group of trained disease surveillance focal persons

### Fears

- Poor time management
- Inadequate facilitation
- Language barrier when interacting with communities

### Ground rules

- Punctuality in attending the training sessions
- Mutual respect, listening carefully and responding thoughtfully
- Mobile phones off or on silent mode
- Active participation in discussions

## Topics

The following training topics were covered through PowerPoint presentations, demonstrations and practical sessions. Detailed training notes are available in Annex 4.

- **General principles of participatory epidemiology:** Qualitative and quantitative methods and approaches; triangulation; veterinary surveillance systems and community participation.

- **Participatory epidemiology approaches:** Attitudes and behaviour of participatory epidemiology practitioners; principles of adult learning; participatory epidemiology approach to traditional beliefs; practices and existing veterinary knowledge of livestock keepers; communication and group management.
- **Participatory epidemiology methods:** Semi-structured interviews; simple ranking; pairwise ranking; proportional piling; proportional piling for morbidity and mortality; matrix scoring; mapping; timelines; seasonal calendars; Venn diagrams; transect walks and clinical case definition.



Figure 1: Practical session on conducting a semi-structured interview.



Figure 2: Practical session on proportional piling.

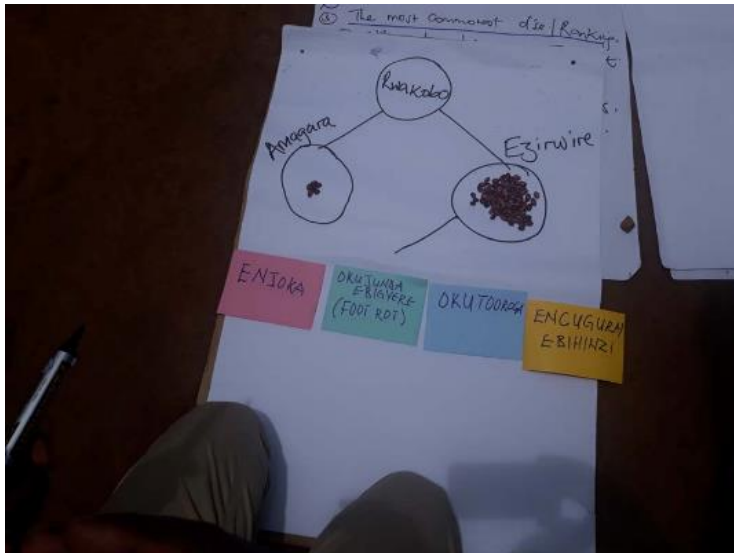


Figure 3: Practical session on proportional piling for morbidity and mortality.



Figure 4: Practical session on matrix scoring.

## Field work

One day was allocated for field work. The participants were organized into three groups to practise the knowledge and skills gained. Three buses were hired to ferry the 48 participants to different locations within a 40-kilometre radius of Mbarara.

## Design of participatory epidemiology field studies

Participants were taken through the steps of designing a general field study and tasked with identifying a specific participatory epidemiology case study topic to undertake when back at their respective district workstations. The participants were grouped according to their districts, thus forming 12 groups. It is expected that funding will be acquired (possibly through VSF Germany) to conduct the participatory epidemiology case studies.

## Evaluation

The evaluation of the course was done through a mood meter posted on the wall to gauge the general mood of the participants on a daily basis. Participants were generally happy throughout the training.



Figure 5: Mood meter.

The trainees also completed workshop evaluation forms (Annex 3). Most of them said that they would use participatory epidemiology in their future work. There was also consensus that the training objectives were relevant and had been met. However, most of the trainees felt that the time allocated for group work and field practice was not adequate. Another challenge cited was the small size of the meeting room which hampered the effective running of the group sessions, considering the large number of trainees. This problem was resolved by getting access to additional meeting rooms.



Figure 6: Group session.

## Conclusion

The training was successful with participants being enthusiastic, cooperative and keen to learn and participate in all sessions. The training objectives were met as the participants received adequate knowledge and skills in participatory epidemiology and participatory disease surveillance.



## Recommendations

1. This introductory training on participatory epidemiology and participatory disease surveillance should be followed by a five-day refresher course to review the participatory epidemiology and participatory disease surveillance tools in detail. The qualitative and quantitative data collected during participatory disease surveillance should be analyzed during the refresher course.
2. The draft case studies should be discussed, refined and finalized with the help of the facilitators.
3. Subject to the availability of funds, the case studies should be implemented in the field for 5–10 days under the supervision of the course facilitators.
4. The facilitators should lead a mentorship program in which research fellows are attached to the district teams according to their research interests. At the end of the mentorship program, a workshop should be organized to disseminate the findings to key stakeholders from the livestock sector. The findings of the case studies should be published in peer-reviewed journals.
5. Participants who have been trained in participatory epidemiology and participatory disease surveillance by a certified trainer should be certified by PENAPH.



Figure 7: Group photo of the workshop participants and trainers.

# Annex 1: Terms of reference

## Overview of Vétérinaires Sans Frontières Germany (VSF Germany)

VSF Germany is an international non-governmental organization providing humanitarian assistance and development aid to vulnerable agro-pastoral and pastoral communities in areas where livestock are important. In the Horn of Africa region, VSF Germany has been implementing programs in South Sudan, Sudan, Kenya, Somalia and Ethiopia since 1998. In January 2019, the organization expanded its scope to Uganda. Its programs focus on food security, livelihoods, nutrition, natural resource management, peacebuilding, water and sanitation, protection and response to disasters and emergencies. Each country program is managed through country offices and teams. Country programs are coordinated and facilitated from the regional office in Nairobi. The organization is a registered charity in Germany with headquarters in Berlin.

VSF Germany is part of a consortium led by the International Livestock Research Institute (ILRI) that received funding from the German Federal Ministry for Economic Cooperation and Development to implement a five-year research-for-development project in Uganda, *Boosting Uganda's Investment in Livestock Development* (BUILD), under the framework of an investment package to improve animal health in Africa. Other organizations involved in the project are the German Federal Institute of Risk Assessment, the Friedrich Loeffler Institute, the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and the National Agricultural Research Organization.

## Overview of the BUILD project

The goal of the BUILD project is to improve the health of livestock in Uganda and, consequently, the health of people involved in producing and processing livestock food products. Target beneficiaries of the project are livestock farmers and traders, butchers, meat vendors, private animal health service providers, students, training institutions and the Government of Uganda.

In Uganda, around 70% of all households keep at least one kind of livestock (including poultry). However, livestock production is constrained by diseases that cause losses from reduced productivity or death of animals, thereby threatening the food and nutrition security as well as livelihoods of livestock-keeping households. Zoonotic diseases threaten the health of livestock farmers and processors and consumers of animal products. Rising antimicrobial resistance and unsafe animal-source foods also pose a threat to human health.

The BUILD project has four components that are aligned with the recommendations of the World Organisation for Animal Health Good Agricultural Practice analysis of the performance of veterinary services in Uganda. The four components are: supporting ongoing campaigns to eradicate peste des petits ruminants; controlling Rift Valley fever; controlling antimicrobial resistance; and improving veterinary public health, food safety and occupational health. It is against this background that VSF Germany seeks to train 48 field animal health practitioners on participatory disease surveillance of peste des petits ruminants and Rift Valley fever.

## Objective of the training workshop

The objective of training workshop is to strengthen the participatory epidemiology and participatory disease surveillance capacity of field veterinarians and to improve disease reporting through enhanced surveillance, prevention and control of endemic diseases in Uganda. Successful completion of the training is a requirement to qualify as a certified practitioner in participatory epidemiology and participatory disease surveillance. VSF Germany will work with the trainers to certify the trainees as participatory disease surveillance practitioners.

It is expected that at the end of the training workshop, the trainees will be able to

- explain the key principles of participatory epidemiology and participatory disease surveillance;
- demonstrate the correct process of conducting participatory epidemiology and participatory disease surveillance;
- conduct participatory epidemiology and participatory disease surveillance as routine activities at their base stations;
- implement disease control strategies for peste des petits ruminants, Rift Valley fever and other transboundary animal diseases based on epidemiology and socio-economic information;

- strengthen field animal disease surveillance, reporting and laboratory diagnosis;
- share information and knowledge that reflects change of attitude in surveillance and disease investigation using participatory epidemiology tools;
- carry out disease outbreak investigations, including post-mortem examination of carcasses, and collect, label, pack and transport samples safely to diagnostic laboratories; and
- act as reliable focal persons on livestock disease surveillance in their respective sub-counties and report any outbreaks to the District Veterinary Officer or Commissioner for Animal Health.

#### Location and venue of training workshop

The five-day training workshop will be conducted on 9–13 March 2020 in Mbarara, Uganda. It shall target 36 animal health personnel (12 District Veterinary Officers, 12 district surveillance focal persons and 12 field veterinarians) from the peste des petits ruminants and Rift Valley fever target districts, three VSF Germany staff, one peste des petits ruminants focal person from MAAIF, one Rift Valley fever focal person from MAAIF, one research assistant, two PhD fellows attached to the peste des petits ruminants component, two PhD fellows attached to the Rift Valley fever component, one MSc fellow attached to the peste des petits ruminants component and one representative from the Food and Agriculture Organization of the United Nations (FAO).

#### Expected deliverables

- Review of the ranking and prioritization of common livestock diseases, including transboundary animal diseases.
- A comprehensive training report will be prepared at the end of the training and submitted within five days after the end of the training.
- Handouts of reference materials will be provided to 24 participants (12 District Veterinary Officers and 12 surveillance focal persons).

#### Training methods

Officers from MAAIF, VSF Germany and FAO involved in routine epidemiological surveillance of peste des petits ruminants and Rift Valley fever in the target districts will participate. The workshop will consist of formal presentations, group work and field sessions involving practical cases developed during the training. An evaluation of the workshop will be completed by the participants at the end of the training. Participants will be given the workshop notes, the FAO manual on participatory epidemiology (Methods for the Collection of Action-Oriented Epidemiological Intelligence) and the PENAPH training manual. Participatory methods will be used to ensure that all participants are actively engaged; these include participatory energizers and climate-setting brainstorming sessions, role plays, PowerPoint presentations, focus group discussions, plenary feedback sessions using flip charts, practical sessions and demonstrations. The workshop will be conducted by one trainer who will also provide the trainees with post-training support to conduct participatory disease surveillance case studies.

#### Essential requirements for trainers

1. Minimum of a Bachelor's degree in Veterinary Medicine, Public Health or other livestock-related qualification with proven experience in participatory epidemiology.
2. Certified participatory disease surveillance trainer and recommended by MAAIF.
3. Proven experience in disease surveillance in the Greater Horn of Africa and clear understanding of livestock health issues in Uganda.
4. Excellent facilitation and report writing skills.

## Annex 2: Agenda

Monday 9 March 2020		
Session and time	Activity	Responsible
0800–0830	Registration	VSF Germany
0830–0900	Introductions	All
<b>Session 1</b>	<b>Opening and scene-setting</b>	
0900–0920	Ground rules, expectation and fears	Facilitators
0920–0930	Objectives and expected outputs	Claire Juliet
0930–0950	Pre-training evaluation	Facilitators
0950–1000	Official address by MAAIF and opening of workshop	Commissioner for Animal Health
1000–1030	Tea break	
<b>Session 2</b>	<b>Review of peste des petits ruminants and Rift Valley fever in Uganda</b>	
1030–1100	BUILD project	Mugizi Rwabita and Kristina Roesel
1100–1130	Peste des petits ruminants component, objectives and outcomes and brief on peste des petits ruminants in Uganda	Paul Lumu
1130–1200	Rift Valley fever component, objectives and outcomes and brief on Rift Valley fever in Uganda	Dan Tumusiime
1200–1230	VSF Germany peste des petits ruminants activities in Uganda	Joshua Waiswa and Claire Juliet
1230–1300	Plenary discussion	Facilitators
1300–1400	Lunch	
1400–1630	Introduction to participatory epidemiology and participatory disease surveillance	
	What is participatory epidemiology? Application and roles of personnel in participatory epidemiology and training needs	Facilitator
	Community participation, its origin and types of community participation	Facilitator
1630–1700	Plenary discussion on the presentations	All
Tuesday 10 March 2020		
0830–0930	Adult learning and its principles	Facilitator
0930–1030	Interview methods, semi-structured interviews, checklist, ranking, proportional piling	Facilitator
1030–1100	Tea break	
1100–1120	Introduction to surveillance, types, methods and objectives and role of epidemiology in surveillance	Paul Lumu
1120–1300	Proportional piling for morbidity and mortality	
1300–1400	Lunch	
1400–1430	Participatory mapping	Facilitator
1430–1530	Case definitions and syndromic surveillance of Rift Valley fever and peste des petits ruminants	Facilitator
1530–1630	Matrix scoring (disease characterization)	Facilitator
1630–1700	Triangulation in participatory epidemiology, seasonal calendars, Venn diagrams	Facilitator



Wednesday 11 March 2020		
0800–0830	Pairwise ranking	Facilitator
0830–0930	Formation of three groups for field work	Paul Lumu and Dan Tumusiime
0930–1030	Development of a checklist and preparation for field work	Paul Lumu and Dan Tumusiime
1030–1100	Tea break	
1100–1230	Development of a checklist and preparation for field work	Facilitator
1230–1300	Development of a checklist and preparation for field work	All
1300–1400	Lunch	
1400–1630	Visit to Mbarara regional laboratory for demonstration of sample processing and analysis	Facilitator
1630–1700	Plenary discussion	All
Thursday 12 March 2020		
Session 3	Field work	
0830–1300	Participatory disease surveillance field activity (sample collection and handling; transect walk)	Groups
1300–1400	Lunch	
1400–1600	Compilation of field reports	Groups
1600–1700	Group presentations and review of field work	Groups
Friday 13 March 2020		
0830–1030	Case study development	Groups
1030–1100	Tea break	
1100–1130	Post-training evaluation	Facilitator
1130–1200	Workshop evaluation	Facilitator
1230–1330	Lunch	
1330–1400	Certificate presentation and closure of workshop	VSF Germany

## Annex 3: Workshop evaluation form

Thank you for your co-operation in completing this questionnaire. The information you provide will be useful in planning future workshops and will help the resource persons improve their presentations and training materials.

A. General assessment	In general, I would rate the workshop as <input type="checkbox"/> Excellent <input type="checkbox"/> Very good <input type="checkbox"/> Good <input type="checkbox"/> Poor <input type="checkbox"/> Very poor
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B. How would you rate this workshop in meeting your expectations? <input type="checkbox"/> Partially <input type="checkbox"/> Fully <input type="checkbox"/> Exceeded If the workshop did not fully meet your expectations, please explain why.
---

C1. Were the training objectives clear?	
<input type="checkbox"/> Fully <input type="checkbox"/> Partially <input type="checkbox"/> No	
C2. Objectives	The objectives of this workshop are listed below. Please circle on a scale of 1 to 5 if, in your opinion, the objectives have been achieved. The scale ranges from 1 (the objective has not been achieved) to 5 (the objective has been achieved).
1. Learnt participatory epidemiology and participatory disease surveillance tools 1                  2                  3                  4                  5	
2. Practised participatory epidemiology and participatory disease surveillance tools in class group work 1                  2                  3                  4                  5	
3. Applied participatory epidemiology and participatory disease surveillance tools in the field 1                  2                  3                  4                  5	
4. Finalized the district case studies 1                  2                  3                  4                  5	
Additional comments:	

D1. Was there a good balance between theory and practical (field) work? <input type="checkbox"/> Yes <input type="checkbox"/> No Please explain
D2. Was the overall timetable good? (logical flow of subjects, duration of sessions) <input type="checkbox"/> Yes <input type="checkbox"/> No Please explain
D3. Was the daily timetable good? (logical flow of subjects, duration of sessions) <input type="checkbox"/> Yes <input type="checkbox"/> No Please explain

E. Strengths and weaknesses

Please list what you consider to be three strengths of the workshop.

- 1.
- 2.
- 3.

Please list what you consider to be three weaknesses of the workshop.

- 1.
- 2.
- 3.

F. Features	Very good	Good	Fair	Poor
Accommodation				
Meals				
Lectures/presentations				
Discussions				
Papers/handouts				
Organization and management				
Quality of visual aids				
Quantity of visual aids				

G. Additional topics	What additional topics would you have liked to be included in this training?
----------------------	--

H. Topics to be removed	What topics should be removed from this training?
-------------------------	---

I. On a scale of 1 to 5, rate the usefulness of this training for your day-to-day work (1 = not useful; 5 = very useful)
1                  2                  3                  4                  5

J. Will you be able to train others on what you have learnt?
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I am not sure

K. On a scale of 1 to 5, rate your knowledge and skills on participatory disease surveillance before and after the training. (1 = very low; 5 = very high)
Before training
1                  2                  3                  4                  5
After training
1                  2                  3                  4                  5

L. Would you recommend this workshop to your colleagues?
<input type="checkbox"/> Yes <input type="checkbox"/> No
Please explain

M. Additional comments
Please use the space below to write down any additional comments you may have.

## Annex 4: Training notes

### Participatory epidemiology

Participatory epidemiology is the use of participatory approaches and methods to improve our understanding of the patterns of diseases in populations. The approaches and tools used are derived from participatory appraisal. Participatory epidemiology is a useful method to explore the social context in which a disease occurs. Participatory disease surveillance is the application of participatory epidemiology to active surveillance. Participatory epidemiology is based on communication and transfer of knowledge, using a variety of tools. These include

- informal interviewing: semi-structured interviews with key informants, focus group discussions;
- ranking and scoring: simple ranking, pairwise ranking, proportional piling, matrix scoring; and
- visualization: mapping, timelines, seasonal calendars and Venn diagrams.

These tools are complemented by secondary information sources, direct observation and laboratory diagnosis. Data are cross-checked by probing, triangulation and laboratory diagnosis.

### Informal interview

- Focused face-to-face conversation between two people or with more than two people
- Question-and-answer session
- Method of collecting data through talking and asking questions

### Checklist or interview guide

In participatory appraisal, an interview questionnaire is not used. Instead, the study team prepares a checklist or interview guide of important points to be covered. This allows the interview to be flexible; it allows the respondents to express their thoughts in their own words within their own conceptual frameworks and the appraisal team to investigate specific themes raised by the respondents. Not all items on a checklist need to be covered with every group of participants; this is a matter of judgement. A checklist/interview guide is used in a participatory assessment to list the important points to be addressed and remind the interviewer when gathering information from respondents.

Example: Checklist/interview guide to develop a relevant intervention for brucellosis and rabies in Karamoja

1. What do brucellosis and rabies in animals and humans mean to you?
2. What are the attitudes of farmers towards these diseases?
3. What are socio-economic effects of these diseases?
4. How are the effects dealt with?
5. How are the affected animals and humans treated?
6. What could you do to treat affected animals and humans?
7. What problems do the people encounter?
8. How could you help the affected population?
9. How can MAAIF and the Ministry of Health help you do that?

Example: Checklist/interview guide to identify and prioritize animal health issues in Karamoja

1. Introduction of the appraisal team and purpose of the visit
2. Introduction of respondents
3. Different categories of livestock farmers in a village
4. Common animal diseases of concern
5. Major diseases of livestock that have been recognized in the last five years
6. Local treatment for these diseases
7. Common animal health programs to improve livestock health in the region
8. Questions from the community
9. Advice from the interviewers

What should the team consider before conducting a semi-structured interview?

- Language
- Rapport/relationship
- Sitting arrangement
- Presentation and dress code
- Gender sensitivity
- Cultural taboos
- Knowledge of the community
- Seasons to look for different diseases
- Time
- Sensitivity of the issue
- Target population, characteristics
- Privacy of the interview location
- Consent/acceptability
- Putting people at risk if they participate
- Non-judgemental attitude
- Body language
- Size of group

Other factors

- Context: time and location
- Content: scope and phrasing
- Question order and phrasing
- Community: use simple language, be mindful of body language
- Observe for non-verbal cues
- Maintain eye contact
- Use appropriate participatory epidemiology tools to bring out information
- Group organization (interviewer, translator, recorder, assistants)
- Do not disclose the disease you are investigating at the outset
- Use open-ended questions (where, when, who, how, what)
- Order questions from broad to specific
- Probe future areas of interest

### Simple ranking

This is arranging items in order based on defined criteria. For example:

The most common fruits eaten in Teso are:

1. Mangoes
2. Bananas
3. Pineapples
4. Apples
5. Papaya

The fruits could also be ranked based on how cheap they are, which might give a slightly different ranking. For example:

Common fruits based on limited costs (cheapest on top) are:

1. Bananas
2. Mangoes
3. Papaya
4. Pineapples
5. Apples

In the case of diseases, these could be ranked based on mortality or frequency of occurrence. It is often best to think of participatory epidemiology tools in terms of steps the first few times you use them.

1. Have your simple ranking question clear in your own mind and write it down in your notebook. For example: *'Rank small ruminant and childhood diseases based on frequency of occurrence.'*
2. To develop the list of items for ranking, begin with an open-ended question: For example: *'What are some common diseases affecting small ruminants and children in the locality?'*
3. Probe the responses. Ask for descriptions of the diseases and clarify details.
4. Explain that you want to carry out an exercise to better understand what you are learning about small ruminant and childhood diseases. If needed, have pictures, symbols or objects to represent each disease or write the name of each disease on a card. Place the pictures, symbols, objects or cards on a flat surface or on the ground where everyone can see them and remind the participants what each represents.
5. Ask the group to rank the diseases based on your defined criteria. For example, ask them to rank the diseases based on frequency of occurrence.

6. Give them time to discuss and rank the cards by consensus. Encourage them to adjust if they want to. When they appear to have finished, ask them if they all agree on the result.
7. Leave the cards in place. Summarize and crosscheck their ranking. For example: *'You have put peste des petits ruminants first, followed by diarrhoea, then contagious caprine pleuropneumonia. Is this correct?'*
8. Probe the results. For example: *'Why did you put this disease first? Why this one last? Why is this one ranked above this one?'*
9. Record the ranking question, the results and notes of any discussion during the ranking or during probing.

Simple ranking is a quick way of gathering data to help the researcher understand issues from the respondents' point of view. It is usually best to conduct this exercise with small groups, although it can be done with individuals or quite large groups. They should discuss the ranking and arrive at their decision by consensus. Listening to the discussion and probing the results of the ranking provides as much or more information than the final ranking.

### Pairwise ranking

Pairwise ranking is a slightly more complex method of ranking where each item is compared individually with all the other items one-by-one. Pairwise ranking can be used to understand the relative importance of different species or diseases and, through probing, to understand the benefits of different species or the impact of different diseases. It is often used when the results from proportional piling are not conclusive.

#### Method of pairwise ranking

1. Have your pairwise ranking question clear in your own mind and write it down in your notebook. For example: *'Compare the importance, in terms of mortality, of different diseases that affect small ruminants and children.'*
2. To develop the list of items for ranking, begin with an open-ended question. For example: *'What are some common diseases that affect small ruminants and children in the locality?'* Alternatively, you can use the items or diseases that came out almost equal during the proportional piling exercise.
3. Explain that you want to carry out an exercise to better understand what you are learning about the diseases. Have pictures, symbols or objects to represent each disease or write the name of each disease on a card. Place the pictures, symbols, objects or cards on a flat surface or on the ground where everyone can see them and remind the participants what each represents.
4. Select one disease card and a second one. Ask: *'Which disease is more important? This one or this one?'* Once they have chosen, cross-check the answer and then probe: *'Do you all agree? Why is this disease more important than this one?'*
5. Repeat the question comparing the same disease with each of the other diseases one-by-one, cross-check and probe. Then select the second disease and compare it with all the remaining diseases one-by-one, and so on until all the diseases have been compared with all the other diseases.
6. The result of each comparison is recorded as well as the details of any discussions generated by cross-checking and probing.
7. Count the number of times each disease was selected. The disease that was selected the most times is ranked highest.

### Proportional piling

This is a visualization technique that allows informers to give relative scores to different items or categories according to criteria. The scoring is done by asking the participants to divide 100 counters (beans, stones or similar items that are familiar to the community and locally available) into different piles that represent the categories.

#### Method of proportional piling

1. Have your proportional piling question clear in your own mind and write it down in your notebook.
2. To develop the list of items or categories for scoring, begin with an open-ended question. For example: *'What are the health problems affecting small ruminants and children in the community?'*
3. Probe the responses; ask for descriptions and clarifications.
4. Place 100 counters in a pile and ask the respondents to divide them according to a characteristic or parameter. Respondents do not need to count the counters but should divide them visually.
5. Give them time to discuss and divide the piles by consensus.

6. Count the counters but leave them in place so that the result can be discussed.
7. Probe the results. Why did they make the choices they did?

### Participatory mapping

Participatory mapping involves making a map of a village or area with the community members.

Why is mapping done with community members or key informants?

- They know their village or region best (they are the experts!)
- It may bring up issues that are not reflected on a standard map
- We need their input to understand their community setting if we want to work with them to prevent and control animal diseases

What can we map?

- Village assets such as schools, churches, mosques, municipality buildings, abattoirs, slaughter slabs, crushes etc.
- Geographical features such as mountains, water bodies (rivers and lakes), forests and agricultural land
- Water sources such as wells, boreholes and springs

These are considered spatial risk factors that may help us understand what is occurring in a community.

What can't we map?

- Socio-economic status
- Behaviour of community members

These are considered non-spatial risk factors.

When can we do participatory mapping?

- To better understand the epidemiology of a disease and implement more targeted prevention and control measures.
- During outbreak investigation to learn about the possible source of the outbreak.
- When planning for surveillance activities; by identifying the high-risk areas for a disease we can target our surveillance efforts to those areas where we are most likely to find the disease if it were to occur.

Mapping is one of the most useful tools of participatory epidemiology. It provides spatial information on livestock distribution, movement, interactions, diseases and disease vectors which is extremely useful in epidemiology. Some information is easier to describe and analyze visually than in written form; it is easier to draw a map than to describe it in words. Mapping is useful at the beginning of an enquiry to define the spatial boundary of the system under investigation. It also acts as a good ice-breaker because many people can be involved. Maps produced on the ground using locally available materials are easy to adjust until informants are happy that the map is correct. Maps do not need written words or labels and therefore non-literate people can participate in the mapping exercise.

As with other activities, it is useful to prepare a mental or written checklist of items to be probed during the mapping exercise. Respondents should not only be asked to illustrate locations on the map, but to provide underlying reasons for movements and resource use.

### Method of participatory mapping

1. Request the group to draw key features of their village or area on a map. For example, the place of the meeting, main roads, rivers, lakes, important public places etc. Depending on the location of the meeting and the type of participants, the map may be drawn on the ground and features represented by objects, or it can be drawn on flip chart paper with coloured marker pens. It is important that the map is large so that everyone can see it and contribute to its development.

2. Request the group to draw key animal health related features, for example, abattoirs, crushes, vaccination points, community-based animal health worker, veterinarian, traditional healer, water sources etc.
3. Once the map is complete, ask probing questions. For example, *'Is this a permanent river? Do you water your animals from here or does it vary per season? How long does it take to get to the grazing areas? Do you know where the first case of the disease occurred?'*
4. To finalize the map, find out the direction of North and mark it on the map. Also try to obtain an idea of scale by asking the distance between two key points and then add an approximate scale. If symbols are used to represent features, add a key to the map.

Maps can be drawn on different scales depending on the objective of the study being carried out. The map could be of a farm and its surrounding area, a village and its surrounding area, a district or even a country.

### **Transect walk**

A transect walk is a tool that involves use of direct observation, informal interview and visualization to describe and show the location and distribution of resources, features, landscapes and mainland uses along a given cross-section of a village or area. Transect walks can be used to:

- identify and explain the cause-and-effect relationships among topography, natural vegetation, animal husbandry systems and other production activities and human settlement patterns;
- identify major problems and possibilities perceived by different groups of participants in relation to features or areas along the transect;
- learn about local technology and practices;
- triangulate data collected through other tools such as mapping; and
- probe the information that has already been mentioned by the community.

A transect walk refers to the process of obtaining a representative cross-section of the area of interest by walking in a straight line (or as straight as possible) right across the area. The transect walk should not coincide with the main road but should start on one side of the area, crossing the main road and continuing to the other side.

### **Method of transect walk**

1. Find a key informant to accompany you on the transect walk.
2. During the transect walk, directly observe and note production systems and community life, not just on the main street.
3. Informally interview the key informant as you walk. The questions can be prompted by what is seen on the way.
4. If you come across community members on the way, you may stop and conduct short informal interviews as appropriate.

From the transect walk notes, you can construct a diagram of the cross-section showing land use, water sources, conditions of buildings, water and sanitation conditions etc. and triangulate this with maps already prepared.

### **Strengths of the transect walk**

- Community members can demonstrate their knowledge of the local environment.
- It enables the researcher to corroborate informants' responses to questions.
- The researcher becomes familiar with the community members which may prompt them to be more open about the problems they face.
- Direct observation by the researcher allows for a clearer understanding of the problems that the community members face.

### **Weaknesses of the transect walk**

- The presence of strangers in the community may bias normal activity.
- Key informants may guide the researcher to see 'highlights' of the community that do not represent it.
- Expectations may be raised among the residents of the community without an opportunity to clearly explain the purpose of the visit.



- Some areas being studied may have poor security and be unsafe for the research team.
- Conducting an interview while walking and looking around may cause delays in note-taking and loss of data.

### Seasonal calendar

Temporal variations in disease occurrence are a common aspect of epidemiological investigation. Many human and animal health problems show seasonal variation. A seasonal calendar can be used to visualize and analyze local perceptions of the seasonality of key disease incidence, population of mosquitoes, risk factors and farming practices. The seasonal occurrence of diseases is interesting to understand in relation to the seasonality of factors that affect the occurrence of different diseases such as climate, management practices, vectors etc. New or unusual factors may emerge that are important in the area. The information can be used to improve disease mitigation strategies such as timing of vaccination or prophylaxis.

To construct a seasonal calendar, it is first necessary to be familiar with local terminology, descriptions of seasons and how these relate to the months of the year. This information can be gathered from key informants. The seasonality of different events or activities of interest is then demonstrated by indicating the timing of occurrence or scoring occurrence in relation to the seasons. Seasons are defined by different characteristics in different regions. Understanding the characteristics that are used to define the seasons in the area under investigation is the first step in constructing a seasonal calendar, then other seasonal events (indicators) can be investigated.

Human activities, namely political, religious and cultural events such as festivals and holidays and times when cash is needed, can affect movements and spread of disease. Other seasonal factors such as availability of water or presence of vectors may be of interest depending on the disease under study.

Livestock management and marketing practices may be seasonal due to movements, calving seasons, housing, buying stock or offtake and may be significant in terms of zoonoses risk. Having developed the seasonal calendar, the results are then discussed and probed with the participants to find out why things happen at certain times and how they may or may not be related to other factors.

### Method of constructing a seasonal calendar

Based on information previously gathered in the interview, the interviewer should be familiar with local customs and practices, common disease problems and the factors that may affect disease occurrence. From this information, a list of indicators (diseases or risk factors) may be developed and the following method used to explore seasonality.

1. Draw a line on the ground or at the top of a piece of flip chart paper and indicate that this represents one year.
2. Ask the informants to describe the seasons that they experience during the year. Record the local names for these seasons. Ask the participants to divide the line into seasons based on their occurrence and length during the year.
3. Label the seasons either by writing them on cards or representing them with local objects or pictures. If the months of the year are commonly used, then write these along the line above or below the relevant seasons.
4. Ask the informants about a key indicator that defines the seasons in the area (for example, rainfall, temperature or length of day). Give them a pile of 20–30 counters and ask them to divide the counters between the seasons to show the relative association of the indicator with that season. All the counters should be used. Draw a line to create the first row of the calendar. Record the results but do not remove the counters.
5. Repeat this with each indicator (health event or disease) on a new line, using 20–30 counters each time, so that gradually a matrix is built up. The name of the indicator may be written on the flip chart or on a card and placed at the side of the matrix. For non-literate participants, a picture or object may represent the indicator.
6. Once the calendar has been constructed, the results should be discussed with the informants using open-ended and probing questions. For example, you could ask: *'Why is this disease more common in this*

*season? Do you know what causes this disease? This disease seems to occur when there is a lot of rain; is that correct?*

### Matrix scoring

Matrix scoring is essentially a series of proportional piling exercises where a list of items, such as diseases, is scored against several indicators, such as clinical signs or source of infection, to create a matrix. This method can be used to better understand the local characterization of diseases and the meanings of local disease names. Even after the proportional piling tool is mastered by participatory epidemiology practitioners, this tool can seem difficult until it has been used numerous times both in practice exercises and in the field. This tool can take some time, so it is usually carried out with particularly knowledgeable community members or health workers who are willing to spend a bit longer talking about diseases in detail.

### Matrix scoring for disease definitions

An important question to ask when conducting participatory epidemiology is: *'Are the researchers and community members talking about the same diseases?'* When interviewing in local languages, technical terms are rarely used. An important first step in any participatory epidemiology study is to understand how community members think about and characterize diseases. Matrix scoring can be a very useful tool to understand disease symptoms and epidemiological characteristics of the diseases described by community members.

### Method of matrix scoring

1. Have a list of 5–6 common diseases or disease syndromes that have been mentioned by the participants. Use the same disease names as used by the participants.
2. For each disease, obtain a list of indicators or characteristics of the disease such as clinical signs or epidemiological features.
3. Use pictures, objects or cards to represent the diseases and place these across the top of the matrix.
4. Write the first indicator (clinical sign) on a card or use a picture or object to represent it. Place this to one side of the first row of the matrix.
5. Place a pile of 30 counters next to the indicator and ask the participants to use the 30 counters to show how strongly the indicator (clinical sign) correlates with each disease. Summarize and cross-check for agreement on how they have scored.
6. Repeat for each indicator (clinical sign) one-by-one, gradually building up the matrix. Leave the matrix in place so that everyone can view the results and discuss as a group.
7. During the exercise and after the matrix is complete, it is essential that the investigator carefully probe the informants as to why they are scoring the way they are. After the matrix is complete, summarize the results and give the informants the opportunity to make changes if they wish.
8. Record the results of the matrix in your notebook.
9. If possible, leave the counters in the different rows until the end of the exercise so that you create a real matrix that shows the patterns of scoring and the participants can get an idea of the different signs related to each disease.

Matrix scoring can also be used to understand

- epidemiological features of disease such as differential diagnosis and associated syndromes;
- general livelihood activities in the household and which household members conduct them; and
- behaviour that promotes or prevents disease.

### Proportional piling to assess morbidity and mortality

A more specific use for proportional piling is to demonstrate the impact of diseases on a group of individuals through relative morbidity, mortality and case fatality. The advantages of this method are that it does not require the actual number of individuals in the group to be known and it compares the morbidity and mortality of different diseases. This can reduce bias towards an individual disease problem.

#### Method of proportional piling to assess morbidity and mortality

1. Use a pile of 100 counters to represent all of the individuals in the group (for example, all of the pregnant women in the village in the last year).
2. Ask the participants to show what proportion were healthy and what proportion became sick in the last one year (for example, healthy pregnancies versus those with adverse outcomes). There is no need to count the beans at this point.
3. Using the list of common diseases or conditions already given during the interview, put the names of diseases or conditions on cards or use pictures or objects to represent them. Use no more than 4–5 diseases or conditions, putting all other mentioned ones under a category "other diseases or conditions".
4. Using the counters representing all those who became sick in the previous year (for example, pregnancies with adverse outcomes), ask the participants to divide the counters to show the proportion that suffered from each of the diseases or conditions on the cards.
5. Taking one disease or condition at a time, ask the participants to use the counters allocated to each disease or condition to show what proportion of people died out of those who suffered from the disease or condition (for example, from among those with infections, the proportion of people who died).
6. Count the counters at the end when the group has finished scoring every disease or condition.
7. Summarize and cross-check the results with the participants.

#### Timelines

Many diseases of interest occur as epidemics at finite time points or as flare-ups of endemic disease. The interviewer may note the years of major epidemics of various diseases on an annual timeline. Timelines are a useful tool to explore the frequency of key disease events and patterns over time. Information on major events, such as droughts, famines or political events, may also be included to assist informants in remembering the timing of key disease events. These dates can be verified using reports from local newspapers. In addition, these events may have an impact on disease occurrence because of the changing movements and habits of animals and people. Their inclusion may allow for triangulation of reported risk factors for disease occurrence. Local names for events should be used as much as possible. Besides providing information, the timeline will provide a useful reference to triangulate the reports made by the community with information in the official government surveillance system.

#### Timelines are useful to

- help clarify the details of disease events mentioned by respondents because they are prompted to remember things that happened before or during the disease event;
- prompt participants to remember additional information, such as other disease outbreaks not already mentioned;
- estimate the duration of events, for example, disease outbreaks and how frequently they occur;
- show the cause-and-effect relationship between events, such as the timing of heavy rainfall and occurrence of peste des petits ruminants in small ruminants; and
- enable the surveillance team to involve the communities in evaluating targets, for example, how soon after a disease report should disease control interventions start?

The timeline can vary depending on the disease of interest. For example, it could be five years to capture information for diseases that occur frequently such as peste des petits ruminants and contagious caprine pleuropneumonia, or it could be 50 years or more for diseases with long epidemic cycles such as Rift Valley fever. It is also interesting to create a timeline if you are exploring events around a specific disease outbreak. For example, it could take days, weeks or months to capture the introduction of a new disease into an area and the time for authorities to respond. Timelines have many uses including understanding trends in disease incidence and epidemics of transboundary animal diseases.

#### Method of constructing a timeline

1. Decide on the timeline based on the issues of interest (e.g. 50 years, 10 years or three years)
2. Ask the participants to indicate key events during the time frame: events affecting the community; political, social or cultural events; major harvest or climatic events and disease outbreak events.

3. Probe the timeline. For instance, you could ask: *'Has this disease ever occurred in this area before that year? Did anything different or significant happen in the few months or weeks before that outbreak?'*

### **Venn diagrams**

Venn diagrams show logical relationships between sets or groups of items or characteristics. They are useful for understanding access to linkages, social groups, key individuals, veterinary service organizations and animal health service providers that act on immediate causes or long-term issues. Venn diagrams consist of various sized circles based on the importance of the item or characteristic. The degree of overlap or non-overlap indicates the inter-relatedness of the items or characteristics. Venn diagrams can provide useful information on relationships that are difficult to describe in words. The ways in which informants organize the diagrams can provide insights into their thinking about management practices and other topics of interest such as veterinary services and resources.

### **Method of drawing Venn diagrams**

The degree of overlap of the circles shows the level of interaction whereas the size of the circle shows the size of the group considered. Relationships among different groups can change and therefore it is important to indicate the date when the diagram was made.

### **Clinical case definition**

Clinical case definition refers to the key signs used to identify a clinical case of the disease of interest. It is based on what the farmer is likely to know and see and can tell or show you. It should be general enough to be able to identify most of cases of the disease of interest. It assists in making decisions about what action to take next.

## Annex 5: List of participants

Name	Sex (M/F)	District or organization	Designation
Abubakar Kintu	M	Wakiso	Senior Veterinary Officer
Alex Mbirizi	M		MSc research fellow
Andrew.J.Kiwango	M	Wakiso	Veterinary Officer
Angello Ssali	M	Sembabule	District Veterinary Officer
Barnet Kabigumira	M	Kabale	Assistant Veterinary Officer; District Surveillance Focal Person
Bernard Kabagambe	M	Kabale	District Veterinary Officer
Dan Tumusiime	M	Entebbe	Rift Valley Fever co-lead
David Achoroi	M	Soroti	Senior Veterinary Officer
Denis Kitya	M	Butebo	Animal Husbandry Officer
Dennis Barasa Wabwire	M	Moroto	District Surveillance Focal Person
Emmanuel Mulabbi	M	Butebo	Animal Husbandry Officer
Eugene Arinaitwe	M	Entebbe	Laboratory Technician
Francis Kyobe	M	Wakiso	Veterinary Officer
Franklin Nshimiye	M	Kiruhura	Veterinary Officer
Geoffrey Otuba	M	Budaka	Veterinary Officer
Gideon Obore	M	Napak	Assistant Animal Husbandry Officer
Isaac Mukumbya	M	Nakasongola	Veterinary Officer
James Muwanga	M	Sembabule	Veterinary Officer
Jimmy Obwoya	M	Kabale	
John Ssekanjako	M	Kiruhura	Veterinary Officer
Joseph Nkamwesiga	M		PhD research fellow
Luke Elubu	M	Soroti	Animal Production Officer
Mercy Namanya	F	Isingiro	District Local Government
Moses Kauta	M	Butebo	District Veterinary Officer
Moses Okino	M	Moroto	District Veterinary Officer
Muzamiru Senyondo	M	Isingiro	Assistant Animal Husbandry Officer
Nsubuga Kizito Elias	M	Rakai	District Veterinary Officer
Ohide Eva Caesar	F	Napak	Animal Husbandry Officer
Patrick Eyudu	M	Soroti	District Veterinary Officer
Paul Kakumirizi	M	Nakasongola	District Surveillance Focal Person
Paul Lumu	M	Entebbe	Senior Veterinary Officer
Peter Owori	M	Budaka	District Veterinary Officer
Robert Kaliisa	M	Rakai	Assistant Veterinary Officer
Robert Nimwesiga	M	Isingiro	Assistant Animal Husbandry Officer
Robert.K.Sserwadda	M	Sembabule	Veterinary Officer; District Surveillance Focal Person
Sam Eswagu	M	Nakasongola	District Veterinary Officer
Siraji Higinyi	M	Budaka	Assistant Animal Husbandry Officer
Stephen Olupot	M	Napak	Laboratory Technician
Sylvia Nalwoga	F	Rakai	Veterinary Officer
Sylver Ainemukama	M	Kiruhura	Assistant Animal Health Officer
Timothy Orose	M	Moroto	Animal Production Department
Sam Okuthe	M	FAO	Country Team Leader
Richard Mukisa	M	FAO	Driver
Stephen Lwerere	M	Entebbe	Driver
Ann Rose Ademun	F	Entebbe	Commissioner for Animal Health/Chief Veterinary Officer
Claire Julie Akwongo	F	Kampala	Epidemiologist
Joshua Waiswa	M	Kampala	Technical Project Manager
Issa Kasozi	M	Kampala	Driver/Logistician